

DOCUMENT RESUME

ED 301 746

CE 051 533

TITLE Electricity Series. Duty Task List.
INSTITUTION Oklahoma State Dept. of Vocational and Technical Education, Stillwater. Curriculum and Instructional Materials Center.
PUB DATE 88
NOTE 28p.; For other duty/task lists, see CE 051 510-538.
AVAILABLE FROM Curriculum and Instructional Materials Center, Oklahoma Department of Vocational and Technical Education, 1500 West Seventh Avenue, Stillwater, OK 74074.
PUB TYPE Guides - Classroom Use - Guides (For Teachers) (052)
EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Apprenticeships; Behavioral Objectives; Electrical Systems; *Electricians; *Electricity; Electric Motors; Electronic Control; *Electronic Technicians; Employment Qualifications; Equipment Maintenance; Job Analysis; Job Skills; Maintenance; *Occupational Information; Secondary Education; *Trade and Industrial Education
IDENTIFIERS Programable Logic Control; Troubleshooting

ABSTRACT

This task list is intended for use in planning and/or evaluating a competency-based course in electricity. The guide outlines the tasks entailed in 10 different duties typically required of employees in the following occupations: residential electrician apprentice, material handler/supply clerk, maintenance electrician apprentice, commercial/industrial electrician apprentice, and programmable logic control technician. The following duties are covered: roughing in and trimming out electrical systems; testing/troubleshooting electrical systems; replacing/repairing components; identifying tools and their uses; identifying materials and their uses; installing and maintaining alternating current motors; and installing, programming, and troubleshooting programmable logic controllers. The occupational duty/task lists are the result of an extensive two-step development process in which information on current occupational requirements was gathered from such sources as consortia, trade associations, and current curriculum materials and was then synthesized by industry representatives, vocational instructors, and state-level representatives. (MN)

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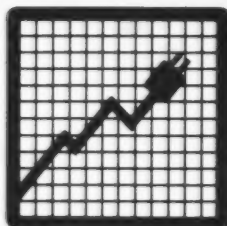
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RESIDENTIAL ELECTRICIAN APPRENTICE
MATERIAL HANDLER / SUPPLY CLERK
MAINTENANCE ELECTRICIAN APPRENTICE
COMMERCIAL / INDUSTRIAL ELECTRICIAN APPRENTICE
PROGRAMMABLE LOGIC CONTROL TECHNICIAN

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OKLAHOMA OCCUPATIONAL TESTING CENTER

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OKLAHOMA OCCUPATIONAL TESTING CENTER

INTRODUCTION:

Today's vocational instructors and administrators are faced with a myriad of important questions. They are searching for methods of providing accountability for students' acquisition of knowledge and skills as related to a constantly changing job market.

The Oklahoma Occupational Testing Center is in the business of eliminating some of the guesswork in answering today's tough questions. The professional staff, using a thorough and valid methodology, has developed duty/task lists for over 150 occupations in vocational education. Additional occupational duty/task lists will be made available as development is completed. These duty/task lists will help answer the following questions:

- Are students being prepared for today's jobs?
- What should today's vocational instructors be teaching?
- Is the curriculum addressing industry needs and is it up-to-date?
- How can vocational programs be improved?
- What in-service programs are needed for instructors?

BACKGROUND:

The occupational duty/task lists are the result of an extensive development process. Information regarding the occupational skills needed for employment is gathered from a number of sources such as consortia, trade associations,

and current curriculum materials. This information is then synthesized by: 1) industry representatives, 2) vocational instructors, and 3) state level vocational representatives. The end result is a listing of occupations and the specific duties and tasks within each occupation. After dissemination for field review a committee of industry and vocational representatives revise the duty/task list to its final form.

USES:

The Oklahoma Occupational Testing Center's Duty/Task Lists are designed to be of value to a vocational program in several ways:

- Improving program planning
- Documenting industrial standards
- Evaluating curriculum and instruction
- Tracking individualized instruction*
- Using as a discussion tool with advisory committees
- Developing up-to-date job descriptions
- Performing self-evaluations
- Performing administrative program evaluations

INFORMATION:

To find out more about the Oklahoma Occupational Testing Center, call toll free:

1-800-654-4502.

Ask for our free catalog, listing over 150 occupations for which duty/task lists are available. CIMC curriculum materials related to these lists may also be available.

*A Progress Chart is provided for tracking individualized instruction.

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Oklahoma Occupational Testing Center

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State Department of Vocational and Technical Education
Stillwater, Oklahoma 74074

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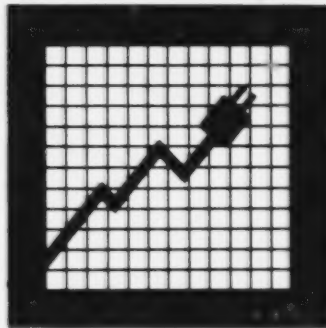
Programmi

Accuracy Code

- This chart may be duplicated as needed.

DUTY/TASK LISTS

ELECTRICITY SERIES



OCCUPATIONS:

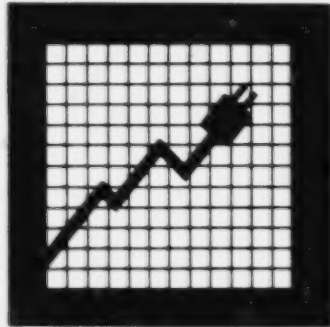
- 1. RESIDENTIAL ELECTRICIAN APPRENTICE**
- 2. MATERIAL HANDLER/SUPPLY CLERK**
- 3. MAINTENANCE ELECTRICIAN APPRENTICE**
- 4. COMMERCIAL/INDUSTRIAL ELECTRICIAN APPRENTICE**
- 5. PROGRAMMABLE LOGIC CONTROL TECHNICIAN**



OKLAHOMA OCCUPATIONAL TESTING CENTER

DUTY/TASK LIST

ELECTRICITY SERIES



OCCUPATION 1: RESIDENTIAL ELECTRICIAN APPRENTICE

- DUTIES:**
- C. Rough In Electrical Systems**
 - D. Trim Out Electrical Systems**
 - E. Test/Troubleshoot Electrical Systems**
 - F. Replace/Repair Components**



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OCCUPATION: RESIDENTIAL ELECTRICIAN APPRENTICE

DUTY: Rough In Electrical Systems

CODE	TASK	TAUGHT	COMMENTS
C.01	Interpret plans and specifications		
C.02	Install service distribution		
C.03	Install distribution circuits		
C.04	Install boxes		
C.05	Install specialty devices		

DUTY: Trim Out Electrical Systems

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DUTY: Test/Troubleshoot Electrical Systems

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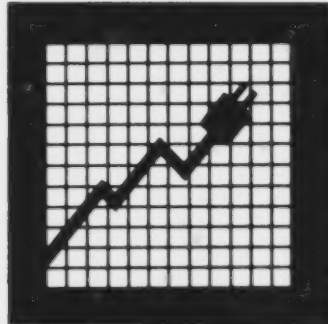
OCCUPATION: RESIDENTIAL ELECTRICIAN APPRENTICE

DUTY: Replace/Repair Components

CODE	TASK	TAUGHT	COMMENTS
F.01	Identify system components		
F.02	Test components		
F.03	Replace defective components		
F.04	Clean, lubricate, and align components		

DUTY/TASK LIST

ELECTRICITY SERIES



OCCUPATION 2: MATERIAL HANDLER/SUPPLY CLERK

- DUTIES:**
- A. Identify Tools and Their Use**
 - B. Identify Materials and Their Use**



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OCCUPATION: MATERIAL HANDLER/SUPPLY CLERK

DUTY: Identify Tools and Their Use

CODE	TASK	TAUGHT	COMMENTS
A.01	Identify common tools and their uses		
A.02	Identify specific tools and their uses		
A.03	Maintain tools		

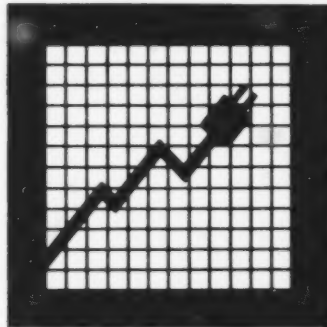
OCCUPATION: MATERIAL HANDLER/SUPPLY CLERK

DUTY: Identify Materials and Their Use

CODE	TASK	TAUGHT	COMMENTS
B.01	Identify wire by type, size, and use		
B.02	Identify boxes and connectors by application		
B.03	Identify devices by type and use		
B.04	Identify power distribution center by type		
B.05	Identify service entrance by type and use		
B.06	Identify motor control devices by type and use		

DUTY/TASK LIST

ELECTRICITY SERIES



OCCUPATION 3: MAINTENANCE ELECTRICIAN APPRENTICE

- DUTIES:**
- E. Test/Troubleshoot Electrical Systems**
 - F. Replace/Repair Components**



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DUTY: Test/Troubleshoot Electrical Systems

CODE	TASK	TAUGHT	COMMENTS
E.01	Measure voltages		
E.02	Measure amperage		
E.03	Measure continuity of circuits		

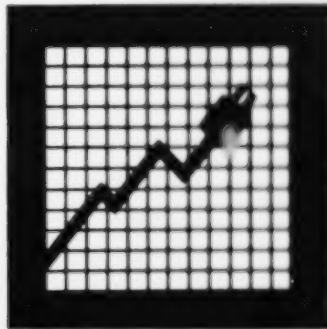
OCCUPATION: MAINTENANCE ELECTRICIAN APPRENTICE

DUTY: Replace/Repair Components

CODE	TASK	TAUGHT	COMMENTS
F.01	Identify system components		
F.02	Test components		
F.03	Replace defective components		
F.04	Clean, lubricate, and align components		

DUTY/TASK LIST

ELECTRICITY SERIES



OCCUPATION 4: COMMERCIAL/INDUSTRIAL ELECTRICIAN APPRENTICE

- DUTIES:**
- C. Rough In Electrical Systems**
 - D. Trim Out Electrical Systems**
 - E. Test/Troubleshoot Electrical Systems**
 - F. Replace/Repair Components**
 - G. Install and Maintain AC Motors**



OKLAHOMA OCCUPATIONAL TESTING CENTER

DUTY: Rough In Electrical Systems

CODE	TASK	TAUGHT	COMMENTS
C.01	Interpret plans and specifications		
C.02	Install service distribution		
C.03	Install distribution circuits		
C.04	Install boxes		
C.05	Install specialty devices		

DUTY: Trim Out Electrical Systems

CODE	TASK	TAUGHT	COMMENTS
D.01	Install wiring devices		
D.02	Install protective covers		
D.03	Install protective branch devices		

DUTY: Test/Troubleshoot Electrical Systems

CODE	TASK	TAUGHT	COMMENTS
E.01	Measure voltages		
E.02	Measure amperage		
E.03	Measure continuity of circuits		

OCCUPATION: COMMERCIAL/INDUSTRIAL ELECTRICIAN APPRENTICE

DUTY: Replace/Repair Components

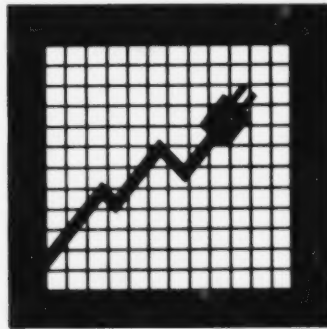
CODE	TASK	TAUGHT	COMMENTS
F.01	Identify system components		
F.02	Test components		
F.03	Replace defective components		
F.04	Clean, lubricate, and align components		

DUTY: Install and Maintain AC Motors

CODE	TASK	TAUGHT	COMMENTS
G.01	Install a single-phase motor		
G.02	Install a 3-phase motor		
G.03	Change the direction of rotation of electrical motors		
G.04	Disassemble and service AC motors		

DUTY/TASK LIST

ELECTRICITY SERIES



OCCUPATION 5: PROGRAMMABLE LOGIC CONTROL TECHNICIAN

- DUTIES:**
- H. Install Programmable Logic Controllers**
 - I. Program Programmable Logic Controllers**
 - J. Troubleshoot Programmable Logic Controllers**



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DUTY: Install Programmable Logic Controllers

CODE	TASK	TAUGHT	COMMENTS
H.01	Terminate I/O control points		
H.02	Mount controller in protective enclosure		

DUTY: Program Programmable Logic Controllers

CODE	TASK	TAUGHT	COMMENTS
I.01	Develop ladder program for PLC		
I.02	Install programs		
I.03	Modify programs		

DUTY: Troubleshoot Programmable Logic Controllers

CODE	TASK	TAUGHT	COMMENTS
J.01	Determine PLC status		
J.02	Check input to PLC		
J.03	Check output from PLC		